Intervals, Transformations, and Slope Solution (version 5)

1. The function f is graphed below.
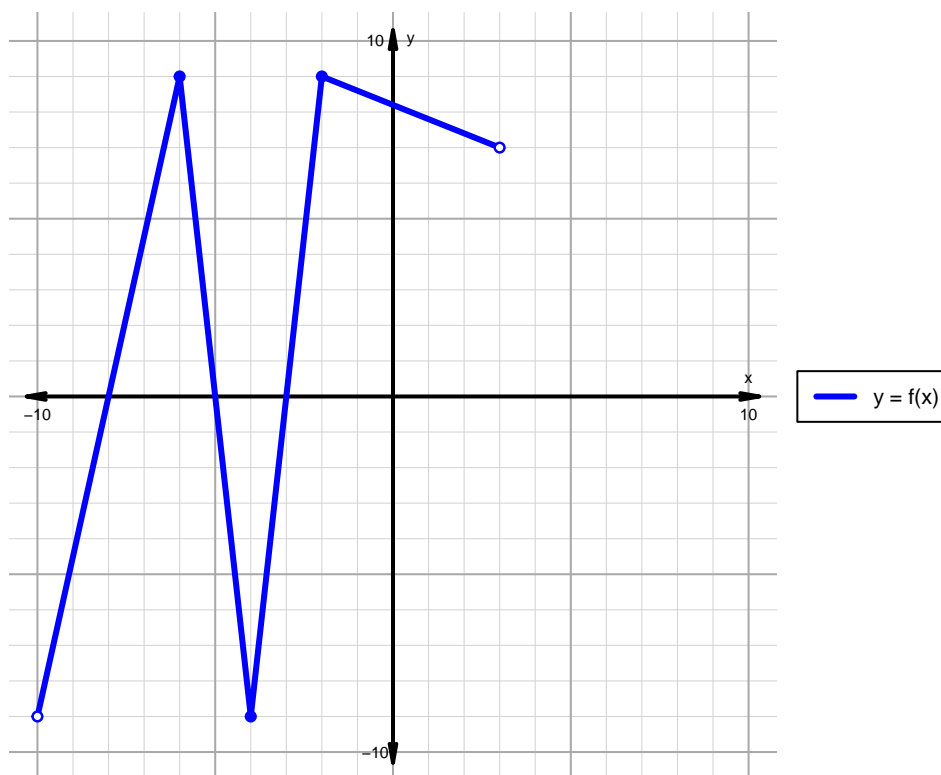
Indicate the following intervals using interval notation. Remember, you can use $\cup$ between two intervals to indicate the union. Except for range, all intervals will indicate x values; this is standard.

Feature	Where
Positive	$(-8, -5) \cup (-3, 3)$
Negative	$(-10, -8) \cup (-5, -3)$
Increasing	$(-10, -6) \cup (-4, -2)$
Decreasing	$(-6, -4) \cup (-2, 3)$
Domain	$(-10, 3)$
Range	$(-9, 9)$

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2. In the four graphs below, $y = f(x)$ is graphed as a dotted line. Please add the indicated transformed graphs indicated by the equations below using a solid line.

$y = f(x) - 2$

$y = -2 \cdot f(x)$

$y = f(x + 2)$

$y = f(2 \cdot x)$
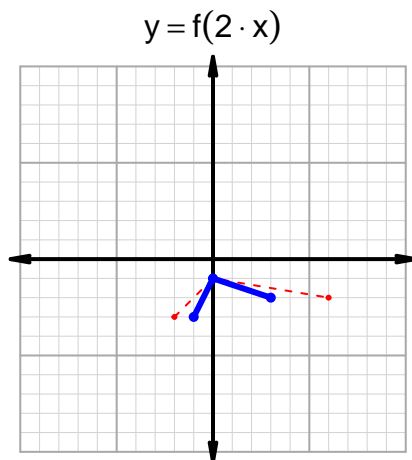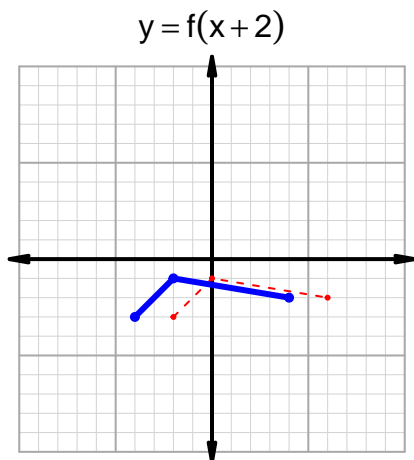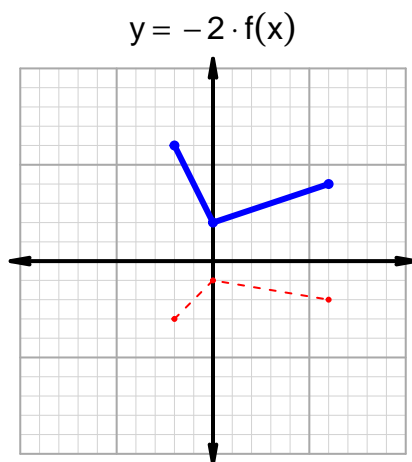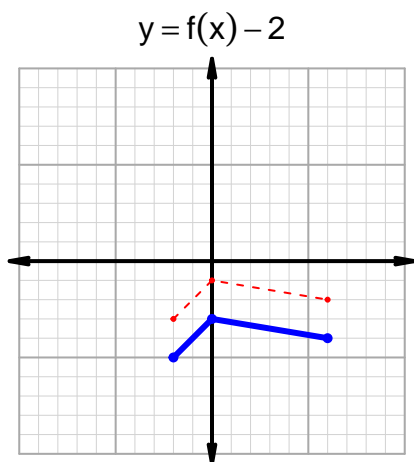
3. Let function g be defined by the table below. Use the formula $\frac{g(x_2) - g(x_1)}{x_2 - x_1}$ to find the average rate of change between $x_1 = 34$ and $x_2 = 54$. Express your answer as a reduced fraction.

x	$g(x)$
34	97
54	62
62	34
97	54

$\frac{f(54) - f(34)}{54 - 34} = \frac{62 - 97}{54 - 34} = \frac{-35}{20}$

The greatest common factor of -35 and 20 is 5. Divide numerator and denominator by the greatest common factor.

$$\text{AROC} = \frac{-7}{4}$$